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EXAMINER

KAO, CHIH CHENG G

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/607,082	Applicant(s) MYLES, JEREMY R.	
	Examiner Chih-Cheng Glen Kao	Art Unit 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-9,19,21-27,29,32,34-40,42-46,48-52 and 56-66 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19,21-24,32 and 34-37 is/are allowed.
- 6) ☒ Claim(s) 1-4,6-9,25-27,29,38-40,42-46,48-52 and 56-66 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 4 and 46 are rejected under 35 U.S.C. 102(e) as being anticipated by Nafstadius (US 2004/0005027).

2. Regarding claims 4 and 46, Nafstadius discloses a system comprising a treatment planning component or means to generate a treatment plan (fig. 1, treatment planning), a simulation component or means to simulate an execution of the treatment plan on a patient (fig. 1, simulation), a third component or means to adjust the treatment plan based on the simulated execution of the treatment plan (paragraph 52), and at least one of component or means for saving an adjustment to the treatment plan, and a component or means for executing the adjusted treatment plan (paragraph 53).

3. Claims 56 and 60 are rejected under 35 U.S.C. 102(e) as being anticipated by Bailey et al. (US 2003/0048868).

4. Regarding claim 56, Bailey et al. discloses a system comprising a gantry (fig. 1, #18) having a radiation source (fig. 1, #22a), a patient support (fig. 1, #60), a radiation detector (fig. 1, #24), wherein said radiation source (fig. 1, #22a) is at a fixed position relative to the gantry (fig. 1, #18), and wherein said system comprises a simulation component (paragraph 37, lines 1-3).

Note that recitations (i.e., “that simulates a distance between a patient and a treatment source in a treatment machine”) with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from prior art if the prior art teaches all the structural limitations of the claim. See MPEP 2114.

5. Regarding claim 60, Bailey et al. discloses a system comprising a gantry (fig. 1, #18) having a radiation source (fig. 1, #22a), said gantry having an axis of rotation (fig. 1, #16), a patient support (fig. 1, #60), and a radiation detector (fig. 1, #24), wherein a distance from said radiation source (fig. 1, #22a) to said axis of rotation (fig. 1, #16) is a fixed distance.

Note that recitations (i.e., “a fixed distance that simulates a treatment source to treatment system axis of rotation of a linear accelerator treatment system”) with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from prior art if the prior art teaches all the structural limitations of the claim. See MPEP 2114.

6. Claim 57 is rejected under 35 U.S.C. 102(b) as being anticipated by Besson et al. (US 6301325).

Besson et al. discloses a system comprising a gantry (fig. 1, #20) having a radiation source (fig. 1, #10), a patient support (fig. 1, #46), a radiation detector (fig. 1, #44), and means to move the patient support (fig. 1, #58) closer to and/or further (fig. 1, along #48) from a gantry head (fig. 1, at #10) as the gantry rotates (fig. 1) to maintain a constant distance between the radiation source (fig. 1, #10) and a point (fig 1, isocenter of gantry) defined in relation to the patient support (fig. 1, #46).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 2, 25, 29, 38, 40, 42-44, 65, and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chou et al. (US 4995068) in view of Bailey et al.

8. Regarding claims 1 and 43, Chou et al. discloses a method comprising necessarily receiving a treatment plan of a target volume (col. 5, lines 34-36, in order to revise a treatment plan), receiving a digital fluoroscopic image of the target volume (fig. 1, via #24), necessarily adjusting the treatment plan based on movement (col. 5, lines 34-36) in a video display (fig. 1, #38) of the digital fluoroscopic image (col. 3, line 66), and at least one of necessarily saving an adjustment to the treatment plan, and executing the adjusted treatment plan (col. 5, lines 34-36, after making "revisions").

However, Chou et al. fails to disclose automation with a machine-readable medium.

Bailey et al. teaches automation necessarily with a machine-readable medium (paragraph 53).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the method of Chou et al. with the teachings of automation of Bailey et al., since providing an automatic means to replace manual activity which accomplishes the same result involves only routine skill in the art. One would have been motivated to make such a modification for speeding up the process.

9. Regarding claims 2 and 44, Chou et al. necessarily has adjusting treatment field information to allow for movement in a field (col. 5, lines 34-36). Bailey et al. also teaches adjusting treatment field information to allow for movement in a field (paragraph 41, lines 12-17, and paragraph 51).

10. Regarding claims 25 and 38, Chou et al. discloses a method comprising displaying a digital image of a patient based on a treatment plan, wherein the digital image is generated on a treatment simulator system (col. 5, lines 12-17), necessarily providing input associated with the digital image, adjusting the treatment plan or patient position based on the input associated with the digital image, and recalculating a treatment plan based on the input associated with the digital image (col. 5, lines 27-37).

However, Chou et al. fails to disclose automation with a machine-readable medium and saving a recalculated treatment plan.

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Bailey et al. teaches automation with a machine-readable medium (paragraph 53) and necessarily saving a recalculated treatment plan (paragraphs 48 and 53, in the computer).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the method of Chou et al. with the teachings of automation and saving of Bailey et al., since one would have been motivated to make such a modification for speeding up the process.

11. Regarding claim 40, Chou et al. necessarily displays fields of data based on the digital image (col. 5, lines 12-37).

12. Regarding claims 29 and 42, Chou et al. necessarily includes providing a radiation field input (col. 5, lines 12-37).

13. Regarding claims 65 and 66, Chou et al. as modified above suggests a method and medium as recited above.

However, Chou et al. fails to disclose doing the steps on a single machine.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the method and medium of Chou et al. as modified above with the steps on a single machine, since performing on one piece a process which has formerly been performed on two pieces and put together involves only routine skill in the art. One would have been motivated to make such a modification for more easily selling the pieces as a complete

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system, for keeping the user from having to move from one place to another, or for reducing compatibility issues between pieces.

14. Claims 3 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chou et al. and Bailey et al. as applied to claims 1 and 43 above, and further in view of Weinberger et al. (US 5764723).

Chou et al. as modified above suggests a method and medium as recited above.

However, Chou et al. fails to disclose adjusting gating information in a treatment plan.

Weinberger et al. teaches adjusting gating information (fig. 1, #7) in a treatment plan (title).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the method and medium of Chou et al. as modified above with the adjusting of Weinberger et al., since one would have been motivated to make such a modification for reducing normal tissue complications (col. 1, lines 63-65) as shown by Weinberger et al.

15. Claims 61-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chou et al. and Bailey et al. as applied to claims 1 and 43 above, and further in view of Nguyen et al. (US 5138647).

Chou et al. as modified above suggests a method and medium as recited above. Furthermore, Chou et al. would necessarily include movement of a patient's internal anatomy (col. 5, lines 34-36).

However, Chou et al. fails to disclose a digital video signal from a real time digital x-ray imager.

Nguyen et al. teaches a digital video signal from a real time digital x-ray imager (col. 1, lines 43-56).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the method and medium of Chou et al. with the imager of Nguyen et al., because of the following rationale. Since the Examiner finds that the prior art (i.e., Chou et al.) contained a “base” method upon which the claimed invention can be seen as an “improvement”, and since the Examiner finds that the prior art (i.e., Nguyen et al.) contained a “comparable” method that has been improved in the same way as the claimed invention, the Examiner thus finds that one of ordinary skill in the art could have applied the known “improvement” technique (of Nguyen et al.) in the same way to the “base” method (of Chou et al.) and the results would have been predictable to one of ordinary skill in the art. Therefore, such a claimed combination would have been obvious.

Furthermore, since the Examiner finds that the scope and content of the prior art (i.e., Chou et al.), whether in the same field of endeavor as that of the Applicant’s invention or a different field of endeavor, included a similar or analogous method, and since the Examiner finds that there were design incentives or market forces (digitization and real-time analysis) which would have prompted adaptation of the known method, the Examiner thus finds that the differences between the claimed invention and the prior art were encompassed in known variations or in a principle known in the prior art and that one of ordinary skill in the art, in view of the identified design incentives or other market forces, could have implemented the claimed

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variation of the prior art, and the claimed variation would have been predictable to one of ordinary skill in the art.

It also would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the method and medium of Chou et al. with digitization, since digitization is well known in the art. One would have been motivated to make such a modification for reducing noise compared to analog signals.

16. Claims 6, 8, 48, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nafstadius as applied to claims 4 and 46 above, and further in view of Miller et al. (US 5117829).

Nafstadius discloses a system as recited above.

However Nafstadius fails to disclose wherein a treatment plan includes a digitally reconstructed radiograph image, wherein the digitally reconstructed radiograph image is imported into the system.

Miller et al. teaches wherein a treatment plan includes a digitally reconstructed radiograph image, wherein the digitally reconstructed radiograph image is necessarily imported into the system from the computed tomography scanner (col. 3, lines 57-66).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the system of Nafstadius with the image of Miller et al., since one would have been motivated to make such a modification for better aligning a patient (col. 2, lines 26-39) as implied from Miller et al.

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17. Claims 7 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nafstadius and Miller et al. as applied to claims 6 and 48 above, and further in view of Murphy et al. (US 5901199) and Jaffray et al. (US 2003/0007601).

Nafstadius as modified above suggests a system as recited above.

However, Nafstadius fails to disclose generating digital fluoroscopy images of a target volume to confirm a digitally reconstructive radiography image.

Murphy et al. teaches generating fluoroscopy images of a target volume to confirm a digitally reconstructive radiography image (abstract, lines 8-18; and col. 5, lines 33-59). Jaffray et al. teaches digital images (abstract).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the system of Nafstadius with the confirming of Murphy et al., since one would have been motivated to make such a modification for higher accuracy and faster results (col. 2, lines 45-52) as implied from Murphy et al.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the system of Nafstadius as modified above with the digital images of Jaffray et al., since one would have been motivated to make such a modification for enhancing spatial resolution (paragraph 91) as shown by Jaffray et al.

18. Claims 9 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nafstadius and Miller et al. as applied to claims 6 and 48 above, and further in view of Frohlich et al. (US 6516046).

Nafstadius as modified above suggests a system as recited above.

However, Nafstadius fails to disclose a cone-beam scanner.

Frohlich et al. teaches a cone-beam scanner (fig. 2; and col. 5, lines 25-27 and 34-36).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the system of Nafstadius as modified above with the cone-beam scanner of Frohlich et al., since one would have been motivated to make such a modification for faster scanning compared to fan-beam scanning.

19. Claims 26, 27, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chou et al. and Bailey et al. as applied to claims 25 and 38 above, and further in view of Frohlich et al.

20. Regarding claims 26 and 39, Chou et al. as modified above suggests a method and medium as recited above.

However, Chou et al. fails to disclose wherein displaying a digital image includes overlaying a simulator digital image and a digitally reconstructed radiograph image.

Frohlich et al. teaches wherein displaying a digital image includes overlaying a simulator digital image and a digitally reconstructed radiograph image (col. 3, lines 19-23).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the method and medium of Chou et al. as modified above with the displaying of Frohlich et al., since one would have been motivated to make such a modification for having precise repositioning in a short time (col. 2, lines 8-15) as shown by Frohlich et al.

21. Regarding claim 27, Chou et al. necessarily displays fields of data based on the digital image (col. 5, lines 12-37).

22. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thornton (US 2002/0193677) in view of Ivan et al. (US 6031888).

Thornton discloses a method comprising placing a patient necessarily on a patient support (figs. 2 and 2b), producing an image of the patient using an imager (fig. 2, #90) while on the patient support, producing a treatment plan for placement of a radiation source (fig. 2, #40) in the patient based at least in part on the image while the patient is on the patient support, and treating the patient according to the treatment plan on the patient support (paragraphs 18, 21, and 55-57).

However, Thornton fails to disclose a flat panel imager.

Ivan et al. teaches a flat panel imager (abstract).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the method of Thornton with the imager of Ivan et al., since one would have been motivated to make such a modification for reducing weight, reducing size, eliminating image distortions, or providing constant image quality (col. 7, lines 34-44) as shown by Ivan et al.

23. Claims 58 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al. (US 6535574) in view of Toshiba (“Clinical Performance: Delivering upon the Promise of Multi-slice CT through Proven Performance”).

Collins et al. discloses a system comprising a gantry (fig. 1, #210) having a radiation source (fig. 1, #215), a patient support (fig. 1, #230), and a radiation detector (fig. 1, #240), wherein the gantry comprises a single frame, wherein the frame comprises a first elongated portion and a second elongated portion disposed at an angle to one another (fig. 1, #210), and wherein the gantry, the patient support, and the radiation detector are electronically coupled (fig. 2).

However, Collins et al. fails to disclose aluminum casting.

Toshiba teaches aluminum casting (page 3, col. 1, lines 28-31).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the system of Collins et al. with the aluminum casting of Toshiba, since one would have been motivated to make such a modification for making a gantry more rigid, for increasing the lifetime of components, and/or for reducing vibrations (pg. 3, col. 1) as shown by Toshiba.

Allowable Subject Matter

24. Claims 19, 21-24, 32, and 34-37 are allowed. The following is a statement of reasons for the indication of allowable subject matter.

25. Regarding claim 19, the prior art fails to disclose or fairly suggest a method of adjusting a radiotherapy simulator system, including automatically adjusting one or more components of the radiotherapy simulator system based on an input associated with a digital image, in combination with all the limitations in the claim. Claims 21-24 are allowed by virtue of their dependency.

26. Regarding claim 32, the prior art fails to disclose or fairly suggest a machine-readable medium having instructions to cause a machine to perform a method of adjusting a radiotherapy simulator system, including automatically adjusting one or more components of the radiotherapy simulator system based on an input associated with a digital image, in combination with all the limitations in the claim. Claims 34-37 are allowed by virtue of their dependency.

Response to Arguments

27. Applicant's arguments with respect to claims 61-66 have been considered but are moot in view of the new ground(s) of rejection. Applicant's arguments filed November 26, 2007, have been fully considered but they are not persuasive.

28. Regarding at least claims 4 and 46, in response to Applicant's argument that the references fail to show certain features of Applicant's invention, it is noted that the features upon which applicant relies (i.e., "an apparatus comprising various components") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Although, Nafstadius may describe different machines, such machines are components, which make up a system. Therefore, Nafstadius reads on the claims as recited.

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29. Regarding claims 56 and 60, Applicant argues that Bailey et al. does not teach or suggest wherein the radiation source is at a fixed position relative to the gantry that simulates a distance between a patient and a treatment source in a treatment machine and further argues that the recitation requires that the fixed position relative to the gantry create a distance equal to a distance between a patient and a treatment source and a treatment machine. The Examiner disagrees. As noted before, recitations (i.e., “that simulates a distance between a patient and a treatment source in a treatment machine” or “a fixed distance that simulates a treatment source to treatment system axis of rotation of a linear accelerator treatment system”) with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from prior art if the prior art teaches all the structural limitations of the claim. See MPEP 2114. In this case, Bailey et al. does disclose the radiation source (fig. 1, #22a) at a fixed position relative to the gantry (fig. 1, #18), which necessarily has a distance between the source and patient. Regardless of whether this position or distance is for simulating something else, there is no structural difference between the apparatus disclosed by Bailey et al. and the claim as recited. Therefore, Bailey et al. reads on the claims.

30. Regarding claim 57, Applicant argues that Besson et al. fails to disclose means to move the patient support closer to and /or further from the gantry head as the gantry rotates to maintain a constant distance between the radiation source and a point defined in relation to the patient support. The Examiner disagrees. As the patient support (fig. 1, #46) of Besson et al. moves along the Z-axis, the support moves closer to and/or further from the gantry head while the gantry rotates (i.e., helical scanning). This movement of the patient support does maintain a

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constant distance between the radiation source (fig. 1, #10) and a point (i.e., isocenter of #20) defined in relation to the patient support (i.e., defined in that the isocenter is a point that the patient support traverses as helical scanning occurs).

Applicant further argues that the movement (along fig. 1, #48) of the patient support is not movement closer and/or further from the gantry head. The Examiner disagrees. Such a movement of the patient support (fig. 1, #46) along the Z-axis necessarily moves the patient support closer to and/or further from the gantry head in the Z-direction. Therefore, Besson et al. does read on the claim as recited, and the claim remains rejected.

31. Regarding at least claims 1 and 43, Applicant argues that Chou et al. does not disclose adjusting a treatment plan based on movement in a video display. The Examiner disagrees. The entire paragraph (col. 4, line 61 - col. 5, line 38) describes how a user views image sequences from a video camera on a display. Such viewing enables the user to provide set-up, treatment, visual verification, and feedback for revisions of treatment planning (col. 5, lines 27-36). If Chou et al. only describes viewing images on a display and using the images for adjusting a treatment plan, then Chou et al. clearly is describing viewing images on a display for adjusting a treatment plan.

Furthermore, in response to Applicant's argument that automatic adjustment provides real-time adjustment, the fact that Applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

32. Regarding at least claims 25 and 38, Applicant argues that the cited references fail to teach the digital image generated on a treatment simulator system. The Examiner disagrees. The image is digitized by the treatment machine in Chou et al. as explained by Applicant, thereby making the treatment machine of Chou et al. part of the treatment simulator system as well. Therefore, the digital image is generated on a treatment simulator system.

33. Regarding claims 9 and 51, Applicant is unable to find any teaching in Frohlich et al. of a cone beam scanner, thereby believing that the corresponding rejections should be withdrawn. The Examiner disagrees. Frohlich et al. does teach a cone (i.e., pyramidal cone) beam scanner (fig. 2; and col. 5, lines 25-27 and 34-36). Therefore, Applicant's arguments are not persuasive, and the claims remain rejected.

34. Regarding claim 52, in response to Applicant's argument that the CT imaging of Ivan et al. cannot be combined with Thornton, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

In this case, Thornton discloses imaging. Ivan et al. teaches using a flat panel imager for imaging. Therefore, the combination of references suggests imaging (Thornton) with a flat panel imager (Ivan et al.).

35. Regarding claims 58 and 59, in response to Applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Collins et al. discloses a single frame gantry having two portions at an angle. Toshiba teaches a cast frame gantry. Therefore, the combination of references suggests a single cast (Toshiba) frame gantry having two portions at an angle (Collins et al.).

Applicant further argues that the motivation for combining the references is improper, since Toshiba teaches overcoming vibrations with supports. The examiner disagrees with this analysis. Toshiba teaches using “a rigid, aluminum die-cast gantry” for overcoming vibration issues to increase the lifetime of components (pg. 3, col. 1). This in itself implies multiple motivations for having cast gantries, such as making a gantry more rigid, increasing the lifetime of components, and/or reducing vibrations. Any of these reasons alone or in combination would be enough to provide motivation for one of ordinary skill in the art to incorporate the teachings of a cast gantry of Toshiba into the single frame gantry of Collins et al.

Applicant also argues that the motivation to combine Toshiba with Collins et al. is improper, since a practitioner in the art would not be motivated to use a cast gantry to reduce vibrations of Collins et al. because the gantry of Collins et al. does not experience the vibrations of concern in Toshiba. The examiner disagrees with this analysis. Even if the gantry of Collins et al. does not experience the same vibrations of concern in Toshiba, any vibrations are always a concern in mechanical systems, such as vibrations in rotating gantries. The reduction of

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vibrations reduces the amount of energy needed to actuate mechanical systems with moving parts in general, and more specifically increases the accuracy of positioning the radiation beam with gantries. Therefore, in the continual pursuit of reducing vibrations in mechanical systems, a practitioner in the art would be motivated to look at Toshiba in order to reduce any vibrations in the rotating gantry of Collins et al. for the purposes of reducing the amount of energy needed for rotating the gantry and for increasing the position accuracy of the radiation beam.

In conclusion, reducing vibrations is a proper motivation for incorporating the teaching of cast gantries of Toshiba with the single frame gantry of Collins et al. Furthermore, one would have been motivated to use cast gantries for making a gantry more rigid and/or for increasing the lifetime of components as clearly taught in Toshiba (pg. 3, col. 1). Therefore, these motivations, alone or in combination, would have been more than enough to lead one of ordinary skill in the art to incorporate the teachings of cast gantries of Toshiba with the single frame gantry of Collins et al.

Furthermore, since the Examiner finds that the prior art contained a “base” system (i.e., Collins et al.) upon which the claimed invention can be seen as an “improvement”, and since the Examiner finds that the prior art (i.e., Toshiba) contained a “comparable” system that has been improved in the same way as the claimed invention, the Examiner thus finds that one of ordinary skill in the art could have applied the known “improvement” technique (of Toshiba) in the same way to the “base” system of (Collins et al.) and the results would have been predictable to one of ordinary skill in the art. Therefore, such a claimed combination would have been obvious.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chih-Cheng Glen Kao/
Primary Examiner, Art Unit 2882